

Music Printing

Music printing continues to attract great interest and to show rapid progress. A general description of methods of music input was provided in the 1985 *Directory*, and a general description of the problems of printing music by computer appeared in the 1986 *Directory*. A comprehensive listing of past and (then) present systems plus a general description of the internal representation of musical data were given in the 1987 *Directory*.

The Center distributed for this directory selected musical examples for reproduction by currently active music software developers. For novice users and for software developers alike, the opportunity to compare results between systems is widely welcomed. We selected a six-part (unaccompanied) motet by Tallis and an excerpt from Beethoven's "Harp" Quartet, Op. 74. Samples of both works were distributed to all software developers on our list as of February 1988 (our current list of music printing software developers is given at the rear of the *Directory*). The Tallis examples, with non-coincident text overlay and underlay, proved to be problematical more frequently than did the Beethoven quartet, with its rhythmic juxtapositions (2:3, 3:4, 3:8), beamed grace notes and slurs. While both examples test the technical limits of some systems, they represent common needs of the traditional repertory and therefore of ordinary musicians. All contributions of these set pieces that we received are reproduced here.

Each developer was also given the opportunity to provide one page of additional material. Contributions that were received late or which contained material under third-party copyright could not be reproduced. Except for photographic reduction when required, all material is reproduced exactly as received.

This year's contributions come from the following categories: (1) proprietary systems, (2) music printing programs for personal computers (Apple Macintosh, IBM PC compatibles, Atari, and others), (3) academic research systems, and (4) products designed to produce musical examples in the context of running verbal text. A few developers fall into multiple categories. Amadeus Music Software, for example, operates a music printing service and makes systems available for purchase. A number of developers of software for personal computers also offer in-house typesetting services. Oberon Systems offers an archiving service for musical data. Contributors in the first and second categories have concentrated on the set pieces.

With regard to software for personal computers, prospective users should bear in mind that the input process may involve any of the following methods:

- * alphanumeric encoding
- * alphanumeric encoding with keyboard redefined for music
- * alphanumeric encoding with keyboard for text and auxiliary keypad for music
- * musical instrument (MIDI) entry of pitch and rhythm
- * musical instrument entry of pitch with alphanumeric entry of rhythm
- * assembly of score from screen icons
- * assembly of score from lightpen identification of musical objects

In general, music entry software for Apple products favors MIDI (synthesizer keyboard) input and/or use of screen menus and icons, while IBM PC-oriented software favors alphanumeric input. To overcome the user-unfriendliness of raw alphanumeric systems of representation, several developers redefine the QWERTY keyboard with templates using familiar musical symbols. Two keyboard redefinition schemes are shown on the following page.

Input methods have important implications for the uses that may be made of the stored data. Users whose requirements extend to musical indexing and analysis will want to consider whether the musical information stored is sufficiently complete and adequately accessible to support these activities. Users whose only requirement is for music printing can base judgments on output only.

All contributors were asked to identify the equipment they used in creating the examples. Some volunteered additional information about input time, printing speed, and other benchmarks of their systems. Readers should bear in mind that some examples are reduced in size to fit our page and that reduction sometimes enhances clarity. Contributors were asked to specify whether reduction had already occurred, since some contributions arrived unretouched and others arrived carefully manicured. A few systems are fully automatic, most are largely automatic, and a few are hybrid systems in which notes are placed and printed automatically but other elements of the score--especially beams, slurs, and performance specifications--are added by graphic artists (for an example of this process, see illustrations 7 and 8). Not uncommonly, the ratio of automatic to manual features varies within one system according to the particular hardware devices used; multiple versions of a program are each intended to accommodate different hardware configurations.

Academic systems are generally intended for multiple uses, of which music printing is only one. Some systems, such as that of LaTrobe University in Australia, are tailored to the needs of particular repertoires. Others, such as the one under development at Oslo University, are intended to support diverse activities (sound synthesis, artificial intelligence, musical analysis). Those shown this year have not been shown in previous directories.

We list below, in alphabetical order of product or system names the enterprises represented in the 54 accompanying illustrations. Illustration numbers are shown in square brackets. The illustrations are arranged by host computer type and alphabetically within each category. Businesses producing software for music printing are listed alphabetically in the address list. For specific product information, please contact these companies or the developers whose names appear in parentheses.

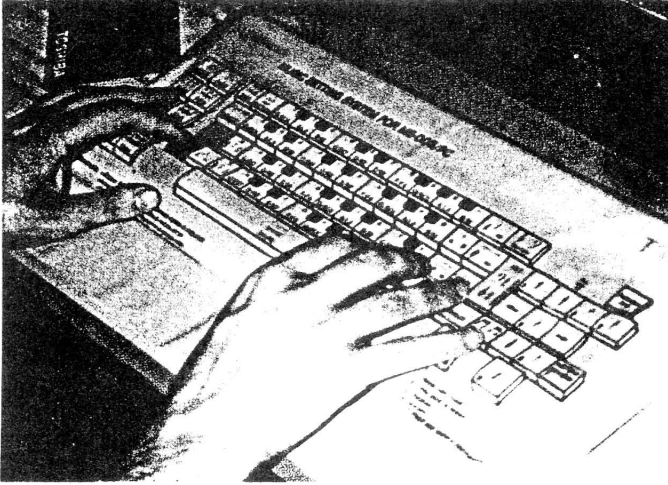
Contributors

A-R Editions [#1 - #2]. Proprietary system developed by Tom Hall. Inhouse and contract typesetting of music.

Alpha/TIMES [#9]. Commercial (Apple). TIMES stands for Totally Integrated Musicological Environment System. Unusual input system (voice recognition device with light

Keyboard Redefinition Schemes

(a) **La mà de guido:** all letter and number keys of the QWERTY keyboard have a pitch equivalent.



Bar (1) Voice (1)

C D E b B A G
5 t y p o g

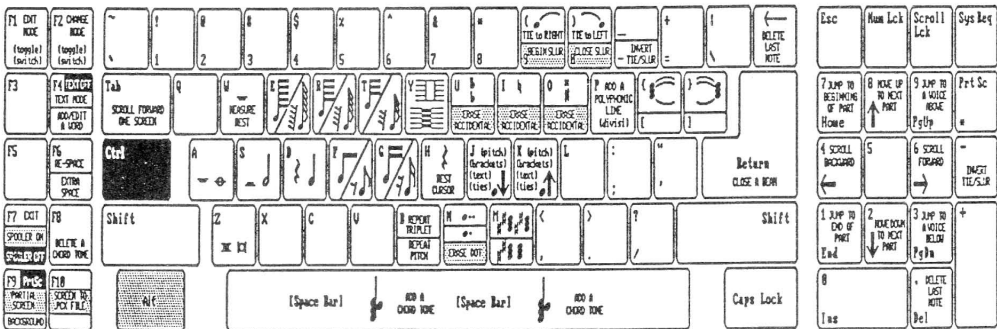
Bar (2)

s
C B A G # F { } D
x p o i a 8 t

Bar (3)

G [] [SAVE]
9

(b) **THEME:** The Music Editor--many alphabetic keys are used for rhythmic information.



Keyboard Layout and Keyboard Commands©1986,1987,1988
for THEME, The Music Editor©1986,1987,1988

Used by permission

MusiKrafters [#44 - #46]. Software company providing special-purpose products for musical excerpts and unusual notations for the Apple Macintosh. Robert Fruehwald is the developer.

MusScribe [#12 - #14]. Commercial product for the Apple Macintosh by Keith Hamel, whose company is now called SoftCore Music Systems.

Nightingale [#15 - #16]. Commercial product under development by Don Byrd for the Apple Macintosh. His company is called Advanced Music Notation Systems.

Note Processor [#28 - #29]. Commercial product for IBM PC compatibles developed by Stephen Dydo. Uses alphanumeric input with mouse editing. MIDI input is under development. Contract typesetting available for music publishers.

PARD [#30 - #31]. Music printing system under development in Milan. The system is mainframe based, with plotter output. The developers are Walter Prati and Giorgio Ceroni.

Professional Composer [#17]. Commercial product for the Apple Macintosh offered by Mark of the Unicorn. MIDI output provided by Professional Performer.

SCORE [#33 - #36]. Originally an academic research system developed by Leland Smith at Stanford University. A PC version is now available from Passport Designs. System is currently in use by several commercial music publishers and some research facilities (*e.g.*, optical scanning unit at the University of Surrey). Includes alphanumeric input, forty music fonts and PostScript text font compatibility.

SCRIBE [#49 - #50]. Academic research system developed jointly by La Trobe and Melbourne Universities for fourteenth-century music. Can interleave red and black neumes to reproduce colored notation in its original format. Some programs available on site-license basis for IBM PC compatibles. Software development by John Griffiths; John Stinson is the head musicologist.

THEME, The Music Editor [#37 - #39]. Academically oriented commercial product for IBM PC compatibles. Alphanumeric input using redefined keyboard (see illustration). Provision for MIDI output. Mark Lambert is the developer.

Correspondents

Much additional activity is taking place in the field of computer-assisted music printing. We list below additional sites and products whose directors or developers have been in recent touch with the Center:

ETH (Zurich). Giovanni Müller and Raffaello Giuletti, who work at the Eidgenössische Technische Hochschule in Zurich, are attempting to define a class of naturally parameterizable formatting operations in the continuing development of a high-quality music printing system at their institute.

Finale. A commercial program for the Apple Macintosh currently being beta-tested. A version for the IBM PC is under development. Coda Software, a division of the Wenger Music Learning Corporation, is the distributor.

HB Music Engraver. A recently-released commercial program for the Apple Macintosh. Alphanumeric input using keyboard redefinition. Supports both PostScript "Sonata" font and a custom font called "Interlude." Can convert files from Professional Composer. The distributor is HB Imaging, Inc.

Laboratorio Informatica Musicale. The LIM printing system, under development by Goffredo Haus, Luigi Finarelli and associates at LIM (University of Milan), utilizes an Apple Macintosh in a research and electronic music setting. The system is designed to accept data in several codes and formats.

Oxford Music Processor. A commercial product for the IBM PC used with Epson dot matrix printers and HPGL plotters currently being beta-tested. Alphanumeric input using keyboard redefinition. The distributor is Oxford University Press.

Ohio State University. Extensive research project concerned with the development of a MusiCopy Language Processor terminated in late 1987. The project was headed by John Gourlay. Actual printing was oriented towards the Xerox 2700, a character-oriented laser printer. Dean Rousch's "Music Formatting Guidelines" (OSU-CISRC-3/88-TR10) is a systematic listing of the main graphic elements of common musical notation (CMN). The algorithm described in "Optional Line Breaking in Music" (OSU-CISRC-8/87-TR33) by Wael Hegazy and John Gourlay represents an effort to extend the line-breaking model developed by Donald Knuth for TeX.

Staatliches Institut für Musikforschung. Music printing programs written in FORTRAN in the early 1970's by Norbert Böker-Heil for IBM 360 input and output from a Digiset T 41 typesetter are currently under revision. The new programs will be written in C, will operate initially under MS-DOS and later under the UNIX operating system, and will be PostScript compatible. The existing system has been used to produce scores for music publishers. Questions regarding its use may be directed to the firm of Satz-Rechen-Zentrum in Berlin.

Illustration 1

Proprietary Systems A-R Music Engraving System (A-R Editions, Inc.)

Input device: DG S-130

Output device: Linotron 202

Sup. In ma - nus tu - as, Do -

Disc. In ma - nus tu -

C.T. In ma - nus tu - as, Do - mi - ne, in ma - nus tu - as, Do - mi - ne,
In ma - nus tu - as, Do - mi - ne, in ma - nus tu - as, Do -

T. In ma - nus tu - as, Do - mi - ne, in ma - nus tu - as, Do - mi -
- mi - ne, com - men - do spi - ri - tum me - um:

B. as, Do - mi - ne, com - men - do spi - ri - tum me - um:
mi - ne, com - men - do spi - ri - tum me - um:
ne, com - men - do spi - ri - tum, com - men - do spi - ri - tum me - um:

The musical score is written for five voices: Soprano (Sup.), Discant (Disc.), Canto (C.T.), Tenor (T.), and Bass (B.). The key signature has two flats (B-flat and E-flat), and the time signature is 4/4. The lyrics are in Latin. The Soprano part begins with 'In ma - nus tu - as, Do -'. The Discant part begins with 'In ma - nus tu -'. The Canto part has two lines of lyrics: 'In ma - nus tu - as, Do - mi - ne, in ma - nus tu - as, Do - mi - ne,' and 'In ma - nus tu - as, Do - mi - ne, in ma - nus tu - as, Do -'. The Tenor part has two lines: 'In ma - nus tu - as, Do - mi - ne, in ma - nus tu - as, Do - mi -' and '- mi - ne, com - men - do spi - ri - tum me - um:'. The Bass part has three lines: 'as, Do - mi - ne, com - men - do spi - ri - tum me - um:', 'mi - ne, com - men - do spi - ri - tum me - um:', and 'ne, com - men - do spi - ri - tum, com - men - do spi - ri - tum me - um:'. The notation includes various musical symbols such as notes, rests, and slurs.

Illustration 2

Proprietary Systems A-R Music Engraving System (A-R Editions, Inc.)

Input device: DG S-130

Output device: Linotron 202

The image displays a musical score for a four-staff instrument, likely a piano, in the key of B-flat major (three flats). The score is organized into three systems, each containing four staves. The first system begins with a *cantabile* marking. It features a melody in the upper staves and a bass line in the lower staves. The second system includes *cresc.* (crescendo) markings in the second and third staves. The third system continues the musical development with various rhythmic patterns and phrasing. The notation includes triplets, slurs, and dynamic markings such as *p* (piano) and *cresc.* (crescendo). The overall style is that of a professional musical engraving.

Illustration 3

Proprietary Systems Amadeus Music Software GMBH (Notenversand Kurt Maas)

Input hardware: PDP-11 (UNIX), Atari workstation, MIDI keyboard

Output device: Amadeus Lasersetter

Alternative output devices: various dot matrix printers, plotters,
Monotype Lasercomp

Sup. In ma - nus tu - as, Do -

Disc. In ma - nus tu -

C.T. In ma - nus tu - as, Do - mine, in ma - nus tu - as, Do - mi - ne,

T. In ma - nus tu - as, Do - mine, in ma - nus tu - as, Do -

B. In ma - nus tu - as, Do - mi - ne, in ma - nus tu - as, Do - mi -

mi - ne, com men - do spi - ri - tum me - um:

as, Do - mi - ne, com - men - do spi - ri - tum me - um:

com - men - do spi - ri - tum me - um, spi - ritum me - um:

mi - ne, com men - do spi - ri - tum me - um:

ne, com men - do spi - ri - tum, com - men - do spi - ri - tum me - um:

Illustration 4

Proprietary Systems
Amadeus Music Software GMBH (Notenversand Kurt Maas)

Input hardware: PDP-11 (UNIX)

Output device: Amadeus Lasersetter

Alternative output devices: various dot matrix printers, plotters,
Monotype Lasercomp

Reduced

The image displays a musical score for a four-staff instrument, likely a string quartet, in B-flat major and 3/4 time. The score is divided into four systems. The first system includes the word 'cantabile' and dynamic markings 'p' and '3'. The second system includes 'cresc.' markings. The third system includes '3' markings. The fourth system includes 'sf' markings. The notation includes various musical symbols such as notes, rests, beams, and slurs.

Illustration 5

Proprietary Systems Amadeus Music Software GMBH (Notenversand Kurt Maas)

Input hardware: PDP-11 (UNIX), Atari workstation, MIDI keyboard

Output device: Amadeus Lasersetter

Alternative output devices: various dot matrix printers, plotters,

Monotype Lasercomp

Reduced

The image displays a musical score for Illustration 5, featuring four systems of staves. The first system (16b) shows a piano (p) introduction with a bass line and a treble line. The second system (16a) continues the piece with a treble line and a bass line, marked with 'con forza' and 'stretto'. The third system (17b) shows a treble line with a 'cresc.' (crescendo) and 'dim.' (diminuendo) marking, followed by a 'rall. smorz.' (rallentando and smorzando) marking. The fourth system (17a) shows a treble line with a 'p' (piano) marking and a 'a tempo' marking. The score is written in a key signature of two flats (B-flat and E-flat) and a 4/4 time signature. The notation includes various musical symbols such as notes, rests, and dynamic markings.

Illustration 6

Proprietary Systems

Dal Molin Musicomp-Rev. 3 (Columbia Pictures Publications)

Input device: Musicomp PCS-500 terminal

Output device: Linotype Omnitech laser typesetter

Music font: Linotype Universal Music (revised)

Input time: 23 min.

Printing time: 3 min.

Sup.

C.T.

T.

B.

In ma - nus tu - as, Do - mi - ne, in

In ma - nus tu - as, Do - mi - ne,

In ma - nus tu - as, Do - mi -

ma - nus tu - as, Do - mi - ne, com -

in ma - nus tu - as, Do - mi

ne, in ma - nus tu - as, Do - mi - ne, com-men-do

Illustration 7

Proprietary Systems Dal Molin Musicomp-Rev. 3 (Columbia Pictures Publications)

Input device: Musicomp PCS-500 terminal

Output device: Linotype Omnitech laser typesetter--automatic elements

Music font: Linotype Universal Music (revised)

The musical score is presented in three systems, each containing four staves. The notation is in a key signature of three flats and a common time signature. The first system begins with the tempo marking 'cantabile' and a piano 'p' dynamic. The second system features 'cresc.' markings on the second, third, and fourth staves, indicating a crescendo. The third system continues the musical notation across the four staves.

Illustration 8

Proprietary Systems Dal Molin Musicomp-Rev. 3 (Columbia Pictures Publications)

Input device: Musicomp PCS-500 terminal

Output device: Linotype Omnitech--graphic completion

Input time: 30 min. (input: Steve Einbinder)

Graphic additions: 30 min. (artist: William Moy)

Printing time: 3.5 min.

The image displays a three-system musical score for piano, written in a key signature of three flats (B-flat, E-flat, A-flat) and a 3/4 time signature. The notation is arranged in three systems, each with three staves (treble, middle, and bass clef). The first system begins with the word *cantabile* and includes a triplet of eighth notes in the treble staff, marked with a *p* (piano) dynamic. The second system features a *cresc.* (crescendo) marking in the treble staff, with the middle and bass staves also showing a *cresc.* marking. The third system continues the musical development. The score is characterized by flowing melodic lines, often with slurs, and includes various rhythmic patterns such as triplets and sixteenth notes. The overall style is that of a professional musical manuscript.

Illustration 9

Commercial Software--Apple Macintosh Alpha/TIMES (Christoph Schnell)

Input device: Ultrasonic digitizer

Host computer: Macintosh SE or II

Output device: Unspecified laser printer

Status: available as part of a comprehensive system

A. Spacing of original manuscript (Engelberg 314) preserved

B. Incipit followed by automatically generated (1) DARMS code, (2) sequence of scale degrees, and (3) sequence of melodic intervals ["gr" = grosse (major), "kl" = kleine (minor)]

A. Kyrie. Magne deus potencie liberator

The image shows two staves of musical notation. The top staff has a treble clef and a key signature of one flat (B-flat). The melody consists of eighth and quarter notes. The bottom staff has a bass clef and the same key signature. The lyrics 'Ky-ri - e. Mag - ne de - us' are written below both staves, with hyphens indicating syllables across notes.

DARMS: 23!F 24P 24P 25P 26V 27V 26P 25V 24P
73!F 74P 74P 75P 72P 70P 72V 71P 74V

B. Ridente la calma

Wolfgang Amadeus Mozart

The image shows a single staff of musical notation in treble clef with a key signature of one flat (B-flat). The tempo marking 'Larghetto' is above the staff. The melody is in 3/8 time. The lyrics 'Ri - den - te la cal - ma' are written below the staff.

- (1) 23!G !K-25 !M3/8 RE RE RS 26S / 26S. 29T 24E 25E / 26S. 24T 26E
- (2) c 1 4 ,6 ,7 1 ,6 1
- (3) rel +re4 -kl6 +kl2 +gr2 -kl3 +kl3

Illustration 10

Commercial Software--Apple Macintosh Music Publisher (Graphic Notes)

Input device: Macintosh SE with Graphic Notes Presto Pad

Output device: Variatyper VT600 (600 d.p.i.); PostScript compatibles

Status: available

Sup. In ma - nus tu - as, Do -

C.T. In ma - nus tu -

T. In ma - nus tu - as, Do - mi - ne, in ma - nus tu - as, Do - mi - ne,

B. In ma - nus tu - as, Do - mi - ne, in ma - nus tu - as, Do - mi -

- mi - ne, com-men-do spi - ri - tum me - um:

as, Do - mi - ne, com-men-do spi - ri - tum me - um:

com-men-do spi - ri - tum me - um, spi-ri-tum me - - - um:

mi - - - ne, com-men-do spi - ri - tum me - - - - - um:

ne, com-men-do spi - ri - tum, com-men-do spi - ri - tum me - - - - - um:

Illustration 11

Commercial Software--Apple Macintosh Music Publisher (Graphic Notes)

Input device: Macintosh SE with Graphic Notes Presto Pad

Output device: Variatyper VT600 (600 d.p.i.); PostScript compatibles

Status: available

The image displays three systems of musical notation, each consisting of three staves (treble, alto, and bass). The key signature is three flats (B-flat, E-flat, A-flat), and the time signature is 3/4. The notation includes various musical elements:

- System 1:** The first staff is marked *cantabile*. The second staff begins with a *p* (piano) dynamic. The third staff features a *p* dynamic and a triplet of eighth notes. The system concludes with a dense, rapid sixteenth-note passage in the treble staff.
- System 2:** This system features a crescendo (*cresc.*) in all three staves. The notation includes various rhythmic patterns, including eighth and sixteenth notes, and slurs.
- System 3:** The system begins with a triplet of eighth notes in the treble staff. The notation continues with various rhythmic patterns and slurs across the staves.

Illustration 12

Commercial Software--Apple Macintosh MusScribe (Keith Hamel/ SoftCore Music Systems)

Input device: Macintosh

Output device: Linotronic L100 phototypesetter (1270 dots per inch)

Status: available

70% reduction

The image displays a musical score for a hymn, "In Ma-nu-s tu-as, Do-mi-ne, Do-mi-ne". The score is arranged in two systems, each with five staves. The parts are labeled as follows:

- Sup.** (Soprano): The top staff in each system, featuring a treble clef and a key signature of one flat (B-flat).
- Disc.** (Discant): The second staff, featuring a treble clef and a key signature of one flat.
- C.T.** (Cantata): The third staff, featuring a treble clef and a key signature of one flat.
- T.** (Tenor): The fourth staff, featuring a bass clef and a key signature of one flat.
- B.** (Bass): The bottom staff, featuring a bass clef and a key signature of one flat.

The lyrics are written below the staves, with hyphens indicating syllables spread across multiple notes. The first system covers the first two lines of the hymn, and the second system covers the next two lines. The notation includes various musical symbols such as notes, rests, and bar lines, all rendered in a clean, professional style.

Illustration 13

Commercial Software--Apple Macintosh
MusScribe (Keith Hamel/ SoftCore Music Systems)

Input device: Macintosh

Output device: Linotronic L100 phototypesetter (1270 dots per inch)

Status: available

80% reduction

The image displays two systems of musical notation, each consisting of four staves. The first system begins with a *cantabile* marking. The first staff features a melodic line with a triplet of eighth notes. The second staff includes a piano (*p*) dynamic marking and a triplet of eighth notes. The third staff also has a piano (*p*) dynamic marking and a triplet of eighth notes. The fourth staff begins with a piano (*p*) dynamic marking. The second system includes four *cresc.* (crescendo) markings, one on each staff, indicating a gradual increase in volume. The notation includes various musical symbols such as notes, rests, beams, and slurs, all rendered in a clear, professional layout.

Illustration 14

Commercial Software--Apple Macintosh
MusScribe (Keith Hamel/ SoftCore Music Systems)

Input device: Macintosh

Output device: Apple LaserWriter

Status: available

The musical score is presented in three systems. The first system consists of a single bass staff with a key signature of two flats and a common time signature. It contains a sequence of notes and rests, with a final double bar line. The second system is a grand staff (treble and bass clefs) in the same key and time. It features complex chordal textures with arpeggios (labeled 'Arp') and notes marked with 'N' and a '5' with a caret (^). Chord symbols below the staff include I, (I⁶ o⁷), V⁷, o⁷, and I⁶. The third system continues the grand staff with dynamic markings of *ff* and *fff*, and includes fingerings (5, 6, 7) and slurs. A fourth staff, likely for a solo instrument, is shown below the grand staff, featuring a wavy line indicating a tremolo or sustained note, followed by a *ff* dynamic. At the bottom, two additional staves show musical phrases with dynamics of *f* and *pp*.

Illustration 15

Commercial Software--Apple Macintosh Nightingale .70 (Don Byrd/ Advanced Music Notation Systems)

Input device: Macintosh

Output device: Linotronic 300

Status: under development

Sup. In ma - nus tu - as, Do -

Disc. In ma - nus tu -

C.T. In ma - nus tu - as, Do - mi - ne, in ma - nus tu - as, Do - mi - ne,

T. In ma - nus tu - as, Do - mi - ne, in ma - nus tu - as, Do -

B. In ma - nus tu - as, Do - mi - ne, in ma - nus tu - as, Do - mi -

- mi - ne, com - men - do spi - ri - tum me - um:

as, Do - mi - ne, com - men - do spi - ri - tum me - um:

com - men - do spi - ri - tum me - um spi - ri - tum me - um:

mi - ne, com - men - do spi - ri - tum me - um:

ne, com - men - do spi - ri - tum, com - men - do spi - ri - tum me - um:

Illustration 16

Commercial Software--Apple Macintosh
Nightingale .70 (Don Byrd/ Advanced Music Notation Systems)

Input device: Macintosh
Output device: Linotronic 300
Status: under development

String Quartet

Donald Byrd (1967)

Moderato

The musical score is written for a string quartet in 8/8 time, marked Moderato. It consists of three systems of four staves each. The first system begins with a *p* (piano) dynamic in the first three staves and an *mp cantabile* (mezzo-piano cantabile) marking in the fourth staff. The second system features a *cresc.* (crescendo) marking in the first staff and *sim.* (simile) markings in the third and fourth staves. The third system includes *mp* and *p* dynamics in the first two staves, and *cresc.* markings in the third, fourth, and fifth staves. The notation includes various rhythmic patterns, including eighth and sixteenth notes, and rests.

Illustration 17

Commercial Software--Apple Macintosh Professional Composer (Mark of the Unicorn)

Input device: Macintosh

Output device: unspecified Linotronic typesetter

Status: available

Reduced

Beethoven Quartet No. 13 in B-flat Major, Op.130

1 Andante

The image displays a musical score for the first movement of Beethoven's Quartet No. 13 in B-flat Major, Op. 130. The tempo is marked '1 Andante'. The score is presented in four systems, each containing four staves (treble and bass clefs for two parts). The key signature is B-flat major (two flats). The first system (measures 1-3) features a piano (p) dynamic. The second system (measures 4-5) continues the piano texture. The third system (measures 6-7) includes crescendo (cresc.) markings and a piano (p) dynamic. The fourth system (measures 8-9) also features piano (p) dynamics and crescendo markings. The notation includes various musical symbols such as notes, rests, slurs, and dynamic markings.

Illustration 18

Commercial Software--Atari The Copyist (Dr. T's Music Software, Cris Sion)

Input device: Atari 1040ST (IBM PC version also available)

Output device: QMS PS-800 (also supports HP LaserJet, Epson dot matrix compatibles, and HPGL plotters)

File interchange provisions: (see commentary)

Status: available

Reduced

Sup. In ma - nus tu - as, Do-

Disc. In ma - nus tu -

C.T. In ma - nus tu - as, Do - mi - ne, in ma - nus tu - as, Do - mi - ne,

T. In ma - nus tu - as, Do - mi - ne, In ma - nus tu - as, Do -

B. In ma - nus tu - as, Do - mi - ne, in ma - nus tu - as, Do - mi -

mi - ne, com - men - do spi - ri - tum me - um:

as, Do - mi - ne, com - men - do spi - ri - tum me - um:

com - men - do spi - ri - tum me - um, spi - ri - tum me - um:

mi - ne, com - men - do spi - ri - tum me - um:

ne, com - men - do spi - ri - tum, com - men - do spi - ri - tum me - um:

Illustration 19

Commercial Software--Atari The Copyist (Dr. T's Music Software, Cris Sion)

Input device: Atari 1040ST (IBM PC version also available)

Output device: QMS PS-800 (also supports HP LaserJet, Epson dot matrix compatibles, and HPGL plotters)

File interchange provisions: (see commentary)

Status: available

Reduced

The musical score is presented in two systems, each with four staves. The key signature is B-flat major (two flats). The first system begins with a *cantabile* marking. The first staff features a melodic line with a triplet of eighth notes and a sixteenth-note run. The second staff starts with a piano (*p*) dynamic and includes a triplet. The third and fourth staves provide harmonic support with eighth and sixteenth notes. The second system includes *cresc.* (crescendo) markings on the first, second, third, and fourth staves. The notation includes various note values, rests, and articulation marks.

Illustration 20

Commercial Software--Atari EZ-Score Plus 1.0 (Hybrid Arts, Tom Bajoras)

Input device: Atari 1040ST (alt. 520ST)

Output device: Star SG-10 (or any Epson compatible)

Status: available

Reduced

Sup.
Disc.

C.T.

T.
B.

In ma - nus tu - as, Do - mi - ne, in ma - nus
In ma - nus tu - as, Do - mi - ne, In ma -
In ma - nus tu - as, Do - mi - ne, In ma -

This musical score system is for the first part of the hymn 'In manus tuas, Domine'. It features four staves: a vocal staff (Sup.), a disc staff (Disc.), a C.T. (Computer Tune) staff, and a T.B. (Tenor/Bass) staff. The key signature has one flat (B-flat) and the time signature is 2/2. The lyrics are: 'In ma - nus tu - as, Do - mi - ne, in ma - nus'.

In ma - nus tu - as, Do - mi - ne,
In ma - nus tu - as, Do - mi -
tu - as, Do - mi - ne, com -
nus tu - as, Do - mi - ne, com - men - do

This musical score system continues the hymn. It features four staves: a vocal staff (Sup.), a disc staff (Disc.), a C.T. (Computer Tune) staff, and a T.B. (Tenor/Bass) staff. The key signature has one flat (B-flat) and the time signature is 2/2. The lyrics are: 'In ma - nus tu - as, Do - mi - ne, com - men - do'.

Illustration 21

Commercial Software--IBM PC and compatible microcomputers la mà de guido (Llorenç Balsach)

Input device: IBM PC XT/AT

Output device: HP 7475 plotter (also other plotters and laser printers)

Status: available



Illustration 22

Commercial Software--IBM PC and compatible microcomputers la mà de guido (Llorenç Balsach)

Input device: IBM PC XT/AT

Output device: HP 7475 plotter (also other plotters and laser printers)

Status: available



Illustration 23

Commercial Software--IBM PC and compatible microcomputers la mà de guido (Llorenç Balsach)

Input device: IBM PC XT/AT

Output device: HP 7475 plotter (also other plotters and laser printers)

Status: available

Reduced



Illustration 24

Commercial Software--IBM PC compatibles Music Editor (Oberon Systems, Nancy Colton)

Input device: HP Vectra (AT compatible)

Output device: HP LaserJet (11" x 17" capability on HP 2000)

Status: available

Reduced

The image displays a musical score for a Latin hymn, 'In manus tuas, Domine, commendo spiritum meum'. The score is arranged in three systems, each with five staves. The staves are labeled as follows: Sup. (Soprano), Disc. (Discantus), C.T. (Canto), T. (Tenor), and B. (Bass). The key signature is one flat (B-flat), and the time signature is 2/2. The lyrics are written below the corresponding vocal parts. The first system covers the first four measures, the second system covers measures five through eight, and the third system covers measures nine through twelve. The lyrics are: 'In ma - nus tu - as, Do - mi - ne, in ma - nus tu - as, Do - me - ne, in ma - nus tu - as, Do - mi - ne, com - men - do spi - ri - tum me - um:'. The score includes various musical notations such as notes, rests, and accidentals, with some notes beamed together in the lower parts.

Sup.
Disc.
C.T.
T.
B.

In ma - nus tu - as, Do - mi - ne, in ma - nus
In ma - nus tu - as, Do - me - ne, in ma -
In ma - nus tu - as, Do - mi - ne, in ma
In ma - nus tu - as, Do - mi - ne,
In ma - nus tu - as, Do - mi -
tu - as, Do - mi - ne, com -
- nus tu - as, Do - mi -
- nus tu - as, Do - mi -
com - men - do spi - ri - tum me - um:
- ne, com - men - do spi - ri - tum me - um:
- men - do spi - ri - tum me - um, spi - ri - tum me - um:
- ne, com - men - do spi - ri - tum me - um:
spi - ri - tum, com - men - do spi - ri - tum me - um:

Illustration 25

Commercial Software--IBM PC compatibles
Music Editor (Oberon Systems, Nancy Colton)

Input device: HP Vectra (AT compatible)

Output device: HP LaserJet (11" x 17" capability on HP 2000)

Status: available

Reduced

The image displays a musical score for a four-staff instrument, likely a piano, in a key with four flats (B-flat major or D-flat minor). The score is divided into three systems. The first system begins with the word *cantabile* and includes a *p* (piano) dynamic marking. The second system features *cresc.* (crescendo) markings in the second, third, and fourth staves. The third system includes a *3* (triple) marking above the first staff. The notation includes various note values, rests, and articulation marks.

Illustration 26

Commerical Software--IBM PC compatibles Music Processor (Etienne Darbellay)

Input device: IBM PC AT compatible, Hercules graphics card

Output device: IBM Proprinter X24

Status: under development

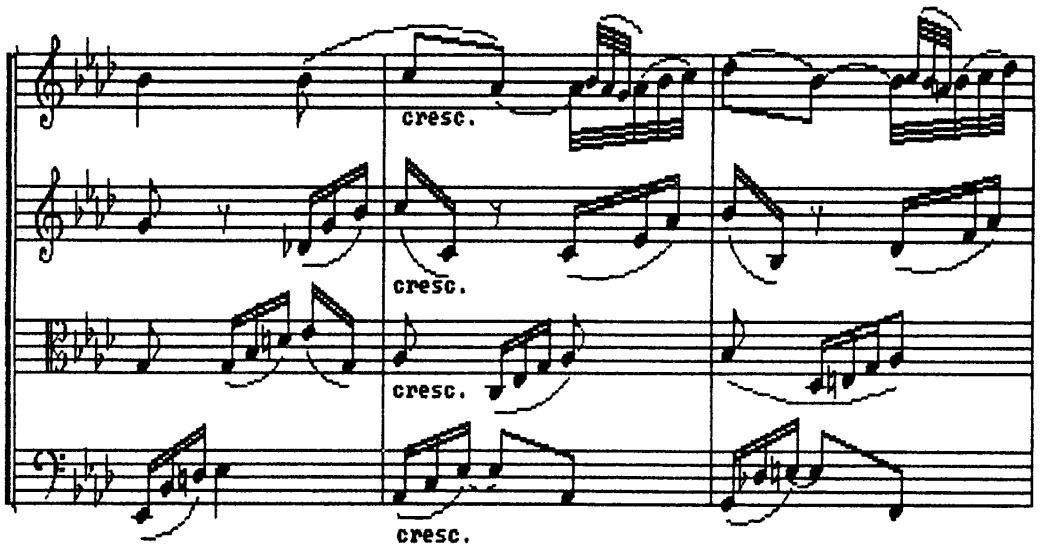


Illustration 27

Commercial Software--IBM PC compatibles Music Processor (Etienne Darbellay)

Input device: IBM PC AT compatible, Hercules graphics card

Output device: Gemini Star

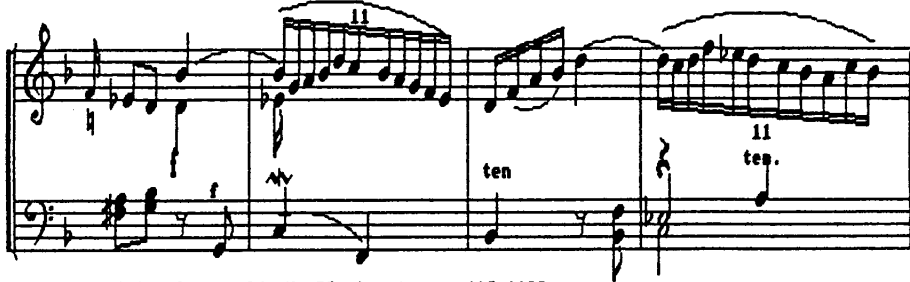
Status: under development

Reduced

Exemple 1



[Louis COUPERIN, Prelude (Extrait)]



[C.P.E. BACH: Sonata IV, No 50, 1 mvmt, mm. 110-113]

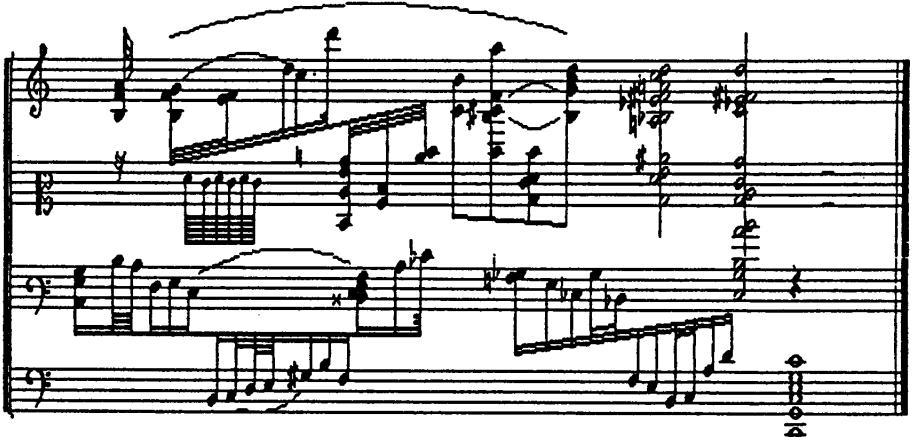


Notation mensurale - Exemple fictif de ligatures.

Exemple 2: Contenu possible d'un ecran.



Exemples fictifs de repartitions entre portees et accords.



Commercial Software--IBM PC compatibles
Note Processor (Thought Processors, Stephen Dydo)

78% Reduction

Sup.
Disc.
CT.
T.
B.

In ma- nus tu- as, Do- mi- ne, in
In ma- nus tu- as, Do- mi- ne,
In ma- nus tu- as, Do- mi-
In ma- nus tu- as, Do-
In ma- nus tu-
ma- nus tu- as, Do- mi-
in ma- nus tu- as, Do-
ne, in ma- nus tu- as, Do-
as, Do- mi- ne com- men- do
mi- ne com- men- do spi-
com- men- do spi- ri- tum me-
ne, com- men- do spi- ri- tum
ne, com- men- do spi- ri- tum, com- men- do spi- ri-

Illustration 29

Commerical Software--IBM PC compatibles Note Processor (J. Stephen Dydo)

Input device: IBM PC compatible, mouse

Output device: NEC P7 (Epson dotmatrix and HP LaserJet compatibility)

Status: available

Reduced

The musical score is written for a four-staff instrument, likely a piano, in B-flat major (three flats) and 3/4 time. It is organized into three systems of three staves each. The first system begins with a *cantabile* marking. The first staff has a half note B-flat, followed by a quarter note A, and a half note G. The second staff has a half note F, followed by a quarter note E, and a half note D. The third staff has a half note C, followed by a quarter note B-flat, and a half note A. The first system ends with a piano (*p*) dynamic marking. The second system begins with a *cresc.* marking. The first staff has a half note G, followed by a quarter note F, and a half note E. The second staff has a half note D, followed by a quarter note C, and a half note B-flat. The third staff has a half note A, followed by a quarter note G, and a half note F. The second system ends with a *cresc.* marking. The third system begins with a triplet marking. The first staff has a half note E, followed by a quarter note D, and a half note C. The second staff has a half note B-flat, followed by a quarter note A, and a half note G. The third staff has a half note F, followed by a quarter note E, and a half note D. The third system ends with a half note C, followed by a quarter note B-flat, and a half note A.

Illustration 30

Commercial Software--IBM PC compatibles
PARD (PARD S.R.L., Walter Prati and Giorgio Ceroni)

Input device: IBM 8580 PS/2

Output device: HP plotter

Status: under development

Reduced

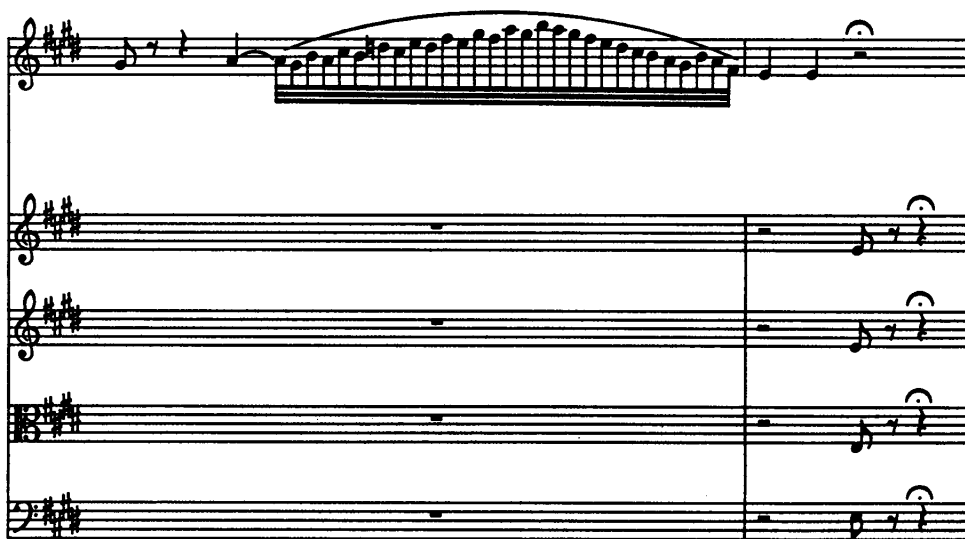


Illustration 31

Commercial Software--IBM PC compatibles
 PARD (PARD S.R.L., Walter Prati and Giorgio Ceroni)

Input device: IBM 8580 PS/2

Output device: HP plotter

Status: under development

Reduced

The musical score is arranged in a system with the following parts from top to bottom:

- Fl.** (Flute): Treble clef, key of B-flat major. Measures 1-4 show a half note F4, a half note G4, and a half note A4. Measure 5 has a dynamic *f* and a half note B-flat4.
- Ob.** (Oboe): Treble clef, key of B-flat major. Measures 1-4 show a half note F4, a half note G4, and a half note A4. Measure 5 has a dynamic *f* and a half note B-flat4.
- Cl. in Do** (Clarinet in C): Treble clef, key of B-flat major. Measures 1-4 show a half note F4, a half note G4, and a half note A4. Measure 5 has a dynamic *f* and a half note B-flat4.
- Fg.** (Fagotto): Bass clef, key of B-flat major. Measures 1-4 show a half note F3, a half note G3, and a half note A3. Measure 5 has a dynamic *f* and a half note B-flat3. A long slur covers measures 6-8.
- Cor. in Fa** (Cor Anglais): Treble clef, key of B-flat major. Measures 1-4 show a half note F4, a half note G4, and a half note A4. Measure 5 has a dynamic *f* and a half note B-flat4.
- Trb. in Sib** (Trumpet in B-flat): Treble clef, key of B-flat major. Measures 1-4 show a half note F4, a half note G4, and a half note A4. Measure 5 has a dynamic *f* and a half note B-flat4.
- Ger.** (Gitarra): Bass clef, key of B-flat major. Measures 1-4 show a half note F3, a half note G3, and a half note A3. Measure 5 has a dynamic *f* and a half note B-flat3.
- Sel.** (Saxofono): Bass clef, key of B-flat major. Measures 1-4 show a half note F3, a half note G3, and a half note A3. Measure 5 has a dynamic *f* and a half note B-flat3. A long slur covers measures 6-8.
- I Vni** (Violini I): Treble clef, key of B-flat major. Measures 1-4 show a half note F4, a half note G4, and a half note A4. Measure 5 has a dynamic *f* and a half note B-flat4. A long slur covers measures 6-8.
- II Vni** (Violini II): Treble clef, key of B-flat major. Measures 1-4 show a half note F4, a half note G4, and a half note A4. Measure 5 has a dynamic *f* and a half note B-flat4. A long slur covers measures 6-8.
- Vle** (Viola): Bass clef, key of B-flat major. Measures 1-4 show a half note F3, a half note G3, and a half note A3. Measure 5 has a dynamic *f* and a half note B-flat3. A long slur covers measures 6-8.
- Vc. e Cb.** (Violoncello e Contrabbasso): Bass clef, key of B-flat major. Measures 1-4 show a half note F3, a half note G3, and a half note A3. Measure 5 has a dynamic *f* and a half note B-flat3. A long slur covers measures 6-8.

Vocal parts and lyrics:

- cu - ro -** (under Ger.)
- Un cer - vel - lo più stra - no, e più** (under Sel.)

Illustration 32

Commerical Software--IBM PC compatibles
PC-MusiComp Rev. 2 (Armando Dal Molin)

Input device: IBM PC with monographics

Output device: Okidata 192

Status: under development

Input time: 47 min.

Print time: 4'50"

The musical score is presented in two systems, each containing four staves. The key signature is three flats (B-flat, E-flat, A-flat), and the time signature is 3/4. The first system includes the following details:

- Staff 1 (Treble):** Labeled "cantabile". It begins with a half note G4, followed by a triplet of eighth notes (A4, B4, C5), and continues with a series of eighth and sixteenth notes.
- Staff 2 (Treble):** Starts with two eighth rests, followed by a triplet of eighth notes (D5, E5, F5), and continues with eighth notes.
- Staff 3 (Bass):** Starts with an eighth rest, followed by a triplet of eighth notes (G4, F4, E4), and continues with eighth notes.
- Staff 4 (Bass):** Starts with a triplet of eighth notes (D4, C4, B3), followed by a half note G3, and continues with eighth notes.
- Dynamics:** The word "p" (piano) appears below the first and third staves of the first system.

The second system continues the piece with similar rhythmic patterns and includes the following details:

- Staff 1 (Treble):** Features a "cresc." (crescendo) marking above the staff.
- Staff 2 (Treble):** Features a "cresc." marking below the staff.
- Staff 3 (Bass):** Features a "cresc." marking below the staff.
- Staff 4 (Bass):** Features a "cresc." marking below the staff.

Illustration 33

Commercial Software--IBM PC compatibles SCORE (Passport Designs, Leland Smith)

Input device: IBM PC compatibles

Output device: Varitype (600 d.p.i.)(support for LaserWriter et al.)

Text fonts: Postscript

Music fonts: SCORE font shown (39 other music fonts available)

Status: available

Reduced

The image displays a musical score for a hymn, featuring four vocal parts: Soprano (Sup.), Discant (Disc.), Contralto (C.T.), and Tenor/Bass (T. B.). The score is written in 2/2 time with a key signature of one flat (B-flat). The lyrics are in Latin: "In ma-nus tu-as, Do-mi-ne, in ma-nus tu-as, Do-mi-ne, com-men-do spi-ri-tum me-um: as, Do-mi-ne, com-men-do spi-ri-tum me-um: mi-ne, com-men-do spi-ri-tum me-um: ne, com-men-do spi-ri-tum com-men-do spi-ri-tum me-um:". The notation includes various musical symbols such as notes, rests, and bar lines, with the lyrics printed below the corresponding staves.

Illustration 34

Commercial Software--IBM PC compatibles SCORE (Passport Designs, Leland Smith)

Input device: IBM PC compatibles

Output device: Varitype typesetter (600 d.p.i.)(LaserWriter support)

Status: available

Reduced

The image displays a musical score for a piece titled "Illustration 34". The score is presented in three systems, each consisting of four staves (treble and bass clefs). The key signature is B-flat major (two flats). The first system begins with the instruction "cantabile" in the first staff. The second system includes the instruction "cresc." (crescendo) in the second, third, and fourth staves. The third system continues the musical notation. The score is rendered in a clean, professional typesetting style, with clear notes, rests, and dynamic markings.

Illustration 35

Commercial Software--IBM PC compatibles SCORE (Passport Designs, Leland Smith)

Input device: IBM PC compatibles

Output device: Varitype typesetter (600 d.p.i.)(LaserWriter support)

Status: available

Reduced

Transposition capability

A. Original

Franz Schubert

Du, Myrte, flüstere lei - se ihr mei - ne Hoffnung zu sag': auf des Lebens

pp

This musical score is for the original version of the song 'Du, Myrte, flüstere' by Franz Schubert. It is written in D major, indicated by two sharps (F# and C#) in the key signature. The melody is in the treble clef, and the piano accompaniment is in the bass clef. The lyrics are written below the melody. The piano part begins with a *pp* (pianissimo) dynamic marking.

B. Transposition

Franz Schubert

Du, Myrte, flüstere lei - se ihr mei - ne Hoffnung zu sag': auf des Lebens

pp

This musical score shows the same piece transposed to B minor, indicated by two flats (Bb and Eb) in the key signature. The melody and piano accompaniment are identical in structure to the original, but the notes are lowered by two semitones. The lyrics remain the same. The piano part also begins with a *pp* dynamic marking.

Illustration 36

Commercial Software--IBM PC compatibles SCORE (Passport Designs, Leland Smith)

Input device: IBM PC compatibles

Output device: Varitype (600 d.p.i.)(support for LaserWriter et al.)

Text fonts: Postscript

Music fonts: SCORE font shown (39 other music fonts available)

Status: available

Reduced

The image displays a musical score for the song "Il gio-ve-net-to A-pril". It consists of six staves. The first four staves are vocal parts (Soprano, Alto, Tenor, and Bass) with lyrics in both Italian and English. The fifth staff is a piano accompaniment in the right hand, and the sixth staff is the piano accompaniment in the left hand. The music is in G major (one sharp) and 4/4 time. The tempo/mood is marked "mf" (mezzo-forte). The lyrics are as follows:

Staff	Instrument/Voice	Lyrics (Italian)	Lyrics (English)
1	Soprano	pril, Il gio-ve-net-to A-pril,	The jol-ly fresh A-pril,
2	Alto	pril, The jol-ly fresh A-pril,	The jol-ly
3	Tenor	gay, A-pril the young and gay,	gay, A-pril the
4	Bass	car-co di fio ri, Il gio-ve-	car-co di fio ri, The jol-ly
5	Piano (RH)	load-en with flow lad - - - - - ers,	load-en with flow lad - - - - - ers,
6	Piano (LH)	with flow-ers en, A-pril the	with flow-ers en, A-pril the

Illustration 37

Commercial Software--IBM PC compatibles THEME, The Music Editor (THEME Software, Mark Lambert)

Input device: IBM PC compatible
Output device: HP LaserJet Series II
File interchange: MIDI conversion utility
Status: available

Reduced

Sup.

Disc.

C.T.

T.

B.

In ma - nus tu - as, Do - mi - ne, in ma - nus
In ma - nus tu - as, Do - mi - ne, in ma - nus
In ma - nus tu - as, Do - mi - ne, in ma -
In ma - nus tu - as, Do - mi - ne,
In ma - nus tu - as, Do - mi - ne, com -
tu - as, Do - mi - ne, com - men - do spi -
- nus tu - as, Do - mi - ne, com - men - do
- nus tu - as, Do - mi - ne, com - men - do spi - ri - tum, com -

Illustration 38

Commercial Software--IBM PC compatibles THEME, The Music Editor (THEME Software, Mark Lambert)

Input device: IBM PC compatible

Output device: HP LaserJet Series II

File interchange: MIDI conversion utility

Status: available

Reduced

The musical score is presented in two systems, each with four staves. The key signature is three flats (B-flat, E-flat, A-flat), and the time signature is 4/4. The first system begins with a *cantabile* marking. The first staff features a melodic line with a triplet of eighth notes and a sixteenth-note run. The second staff starts with a piano (*p*) dynamic and includes a triplet. The third staff also begins with a piano (*p*) dynamic and contains a triplet. The fourth staff starts with a piano (*p*) dynamic and features a triplet. The second system continues the piece, with each of its four staves marked with a *cresc.* (crescendo) instruction. The notation includes various musical symbols such as slurs, ties, and dynamic markings.

Illustration 39

Commercial Software--IBM PC compatibles
THEME, The Music Editor (THEME Software, Mark Lambert)

Input device: IBM PC compatible

Output device: HP DeskJet

File interchange: MIDI conversion utility

Status: available

Reduced

Mozart: Fantasia K. 594

The image displays three systems of musical notation for Mozart's Fantasia K. 594. Each system consists of three staves: a treble staff and two bass staves. The music is written in G major (one sharp) and 3/4 time. The first system shows a melodic line in the treble staff and a supporting bass line. The second system features a more complex melodic line with triplets and a bass line with sustained chords. The third system continues the melodic development in the treble staff, with the bass line providing harmonic support. The notation includes various musical symbols such as notes, rests, beams, and slurs.

Illustration 40

Commercial Systems Dai Nippon Music Processor (Dai Nippon Printing Co., Ltd.)

Input device: Dai Nippon Music Processor (16-bit dedicated machine)

Output device: unspecified phototypesetter (dot matrix support also)

File interchange provisions: data can be exchanged with Waseda University's Automatic Score Recognition System and System for Translation of Musical Notation into Braille

Status: available

Reduced

Concerto

for

Flute and Harp

W. A. Mozart, K. V. 299

1756 - 1791

Allegro

Oboes

Horns in C

Flute Solo

Harp

Violin

Viola

Violoncello Double Bass

Ob.

Hr. in C

Vn.

Va.

Vc. DB.

Illustration 41

Commercial Systems Musicwriter II (Music Print Corp., Cecil Effinger)

Input device: IBM Wheelwriter with proprietary modifications

Output device: same (slurs and ties added by hand)

Status: available

Reduced

The musical score is presented in three systems, each containing four staves. The key signature is B-flat major (two flats) and the time signature is 3/4. The first system is marked 'cantabile' and includes piano ('p') and triplet markings. The second system features 'cresc.' (crescendo) markings in the second, third, and fourth staves. The third system continues the musical development with various slurs and ties. The notation is a computer-generated output from Musicwriter II, showing some characteristic artifacts like slurs and ties added by hand.

Illustration 42

Commercial Systems Musicwriter II (Music Print Corp., Cecil Effinger)

Input device: IBM Wheelwriter with proprietary modifications

Output device: same (slurs and ties added by hand)

Status: available

(Rachmaninoff: Prelude in G minor)

The image displays a musical score for Rachmaninoff's Prelude in G minor. The score is written on multiple staves, with the piano part on the left and the right hand on the right. The piano part features a series of chords and arpeggios, with dynamic markings such as *p* (piano) and *pppp* (pianissimo). The right hand part includes a series of chords and arpeggios, with dynamic markings such as *ffz* (fortissimo forzando), *mf* (mezzo-forte), *f* (forte), and *p arco* (piano arco). The score is marked with a tempo of *Lento* and a dynamic of *mp espr.* (mezzo-piano espressivo). The score is written in G minor, with a key signature of two flats (B-flat and E-flat). The time signature is 4/4. The score is marked with a tempo of *Lento* and a dynamic of *mp espr.* (mezzo-piano espressivo). The score is written in G minor, with a key signature of two flats (B-flat and E-flat). The time signature is 4/4. The score is marked with a tempo of *Lento* and a dynamic of *mp espr.* (mezzo-piano espressivo). The score is written in G minor, with a key signature of two flats (B-flat and E-flat). The time signature is 4/4. The score is marked with a tempo of *Lento* and a dynamic of *mp espr.* (mezzo-piano espressivo).

Illustration 43

Commercial Systems Musicwriter II (Music Print Corp., Cecil Effinger)

Input device: IBM Wheelwriter with proprietary modifications

Output device: same (slurs and ties added by hand)

Status: available

Reduced

Sup. In man - us tu - as, Do -

Disc. In ma - nus tu -

C.T. In ma - nus tu - as, Do -

B. In ma - nus tu - as, Do -

mi - ne, com - men - do spi - ri - tum me - um:

as, Do - mi - ne, com - men - do spi - ri - tum me - um:

mi - ne, com - men - do spi - ri - tum me - um:

ne, com - men - do spi - ri - tum me - um:

Special Purpose Software
ExampleKrafter (MusiKrafter, Robert Fruehwald)

Purpose: sets musical examples of up to five staves

Reduced

cantabile

p

p

p

[illegible]

Sup. In ma - nus

Disc. In ma -

C.T. In ma - nus tu - as, Do - mi - ne, in ma - nus tu - as, Do - mi -

T. In ma - nus tu - as, Do - mi - ne, in ma - nus tu -

B. In ma - nus tu - as, Do - mi - ne, in ma - nus tu - as,

Illustration 45

Special Purpose Software Shape Notes (MusiKrafters, Robert Fruehwald)

Input device: Apple Macintosh (512K)

Output device: Apple LaserWriter (support for Linotronic typesetter)

Purpose: supports implementation of shape notation (Aiken system)



Illustration 46

Special Purpose Software LuteKrafter (MusiKrafters, Robert Fruehwald)

Input device: Apple Macintosh (512K)

Output device: Apple LaserWriter (support for Linotronic typesetter)

Purpose: typesets French, Italian, English, and Spanish lute tablatures as well as some 4- to 6-course cittern and guitar tablatures

Dowlands adew for Master Oliver Cromwell.

BASSO.

D

owlands
adew.

Antasie Seconde

F

Antasie Seconde

Illustration 47

Academic Systems

ERATTO (Ivry-sur-Seine: Hélène Charnassé; Ottawa: Bernard Stepien)

Input device: IBM PC with SIT code

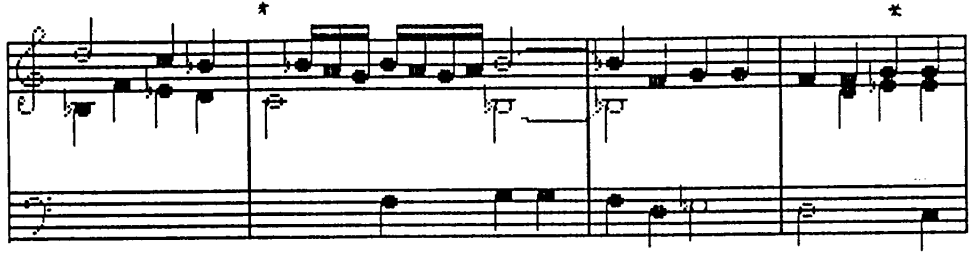
Output device: Epson dot matrix printer

Focus: German lute tablature, monodic style

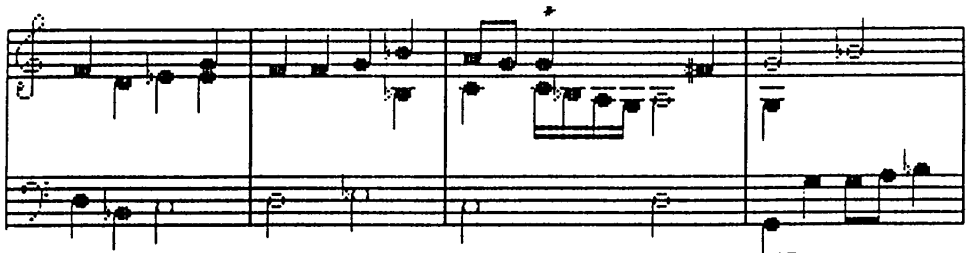
Reduced

10. EIN GUT TRIUM, MIT SCHONEN FUGEN

HANS NEWSIDLER, 1536



8	9	10	11
┌ ┌ ┌ ┌	┌ ┌ ┌ ┌ ┌ ┌ ┌ ┌	┌ ┌ ┌ ┌	┌ ┌ ┌ ┌
k̄ o 9 p	n p k 5 p k 5 k p	o 5 5	o o 5 5
y d 4	2 c g	2 f l	f z d d
	g		l



12	13	14	15
┌ ┌ ┌ ┌	┌ ┌ ┌ ┌	┌ ┌ ┌ ┌ ┌ ┌ ┌ ┌	┌ ┌ ┌ ┌
o 4 d 5	o o 5 p	k 5 5 3 t	5 p
f C l d	f l c	n n c 3 g f	g g g 3 c
		l	+

Illustration 48

Academic Systems

ERATTO (Ivry-sur-Seine: Hélène Charnassé; Ottawa: Bernard Stepien)

Input device: IBM PC with SIT code

Output device: Epson dot matrix printer

Focus: German lute tablature, polyphonic style

Reduced

A. Original source

Ein seer guter
Organistischer
Preamble.

B. Computer printing and analytical reconstruction

1. EIN SEER GUTER ORGANISTISCHER PREAMBEL

HANS NEWSIDLER, 1536.

1 2 3 4

g 3
+ c 3 g 3 c n 4 n c 3 c n 4 i o i 4 n c 3 c n 4 i o 4

5 t 5 t i t 5 o d 4 d o 5 k
c
g

Illustration 49

Academic Systems

La Trobe, Melbourne Universities (SCRIBE, John Griffiths, John Stinson)

Input device: VAX minicomputer, Ericsson PC (IBM PC compatible)

Output device: Houston plotter

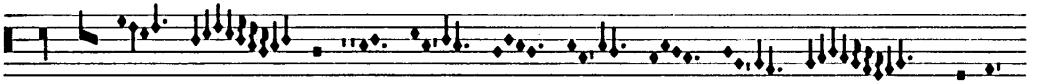
Focus: fourteenth-century music

Search parameters: texts, pitch strings, neumes

Status: available June 1988 on single use and site license basis

Black mensural notation

Inperial sedendo / BARTOLINO / MADRIGAL / SQ / 110V /



In-



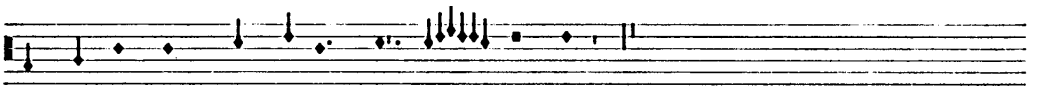
pe- ri- al se- den- do fra piu stel- le. Del



ciel di- sce-



su[']n car- ro d[']o- nor de- gno. Del



ciel di- sce- su[']n car- ro d[']o- nor de- gno.

Reduced; reproduced from two-color original (black neumes on red staff)

Illustration 50

Academic Systems

La Trobe, Melbourne Universities (SCRIBE, John Griffiths, John Stinson)

Input device: VAX minicomputer, Ericsson PC (IBM PC compatible)

Output device: Houston plotter

Focus: fourteenth-century music

Search parameters: texts, pitch strings, neumes

Status: available June 1988 on single use and site license basis

Two-color mensural notation

Le greygnour bien / Matheus de Perusio / ballade / Mod558 / 32r / Cantus

Le grey- gnou[r] bien que na- tu re fist a l'hume en ce folz

mon- de Fu le don dont pris fa- con de Prist en le

sens et mesu-

Reproduced from two-color original differentiating black, white, and red neumes on red staff lines (clef signs and text underlay in black)

Illustration 51

Academic Systems Oslo University (MUSED, Kjell E. Nordli)

Input device: Perqs with MUSIKODE and mouse

Output device: Imagen printer (300 d.p.i.)

Focus: standard repertory, Norwegian folk music; provision for quantitative analysis

Reduced

Schutz Psalmen Davids 1619

The image shows a musical score for a choir. The staves are labeled on the left: SOPRANO 1, SOPRANO 2, ALTO, TENORE, TENORE 1, TENORE 2, BASSO 1, BASSO 2, and BASSO CONTI. The music is written in G major (one sharp) and 2/2 time. The Soprano 1 part has a melodic line with notes on the first, second, and fourth lines of the staff. The Soprano 2 part has a similar line but with some rests. The Alto part has a line with notes on the first and second lines. The Tenore part has a line with notes on the first and second lines. The Tenore 1 and Tenore 2 parts are mostly rests. The Basso 1 and Basso 2 parts are mostly rests. The Basso Conti part has a line with notes on the first and second lines, and some rests.

MUSIKODE for the above example

Schutz Psalmen Davids 1619" T2:2; F1'; NG"[22200] 2_ 57\$ Alto_ 62\$ Tenore kor 1_ 57\$ Tenore 1 kor 2_ 38\$ Tenore 2 kor 2_ 38\$ Basso 1 kor 2_ 38\$ Basso 2 kor 2_ 38\$ Basso continuo_ 57\$ T2:2; F1'; NG"6C/ "6C/ "6C'/ "P:2 - 6D:2/ "6D/ "6D'/ "6D':4 - 6D':2 - 6D':4/ T2:2;F1';NG"5G/ "5A/ "5A/ "P:2 - 5A:2/ "5H/ "5H/ "5H:4 - 5H:2 - 5H:4/ T2:2;F1';NG"5E/ "5F/ "5E/ "P:2 - 5F':2/ "5G/ "5F'/ "5F':4 - 5F':2 - 5F':4/ T2:2;F1';NG"6C/ "5F/ "5A/ "P:2 - 6D:2/ "5G/ "5H/ "5H:4 - 5H:2 - 5A:4/ T2:2;F1';NG"P/ "+P/ "+P/ "+P/ "+P/ "+P/ "+P/ T2:2;F1';NG"P/ "+P/ "+P/ "+P/ "+P/ "+P/ "+P/ "+P/ T2:2;F1';NG"P/ "+P/ "+P/ "+P/ "+P/ "+P/ "+P/ "+P/ T2:2;F1';NG"5C/ "4F/ "4A/ "P:2 - 5D:2/ "4G/ "4H/ "4H:4 - 4H:2 - 4A:4/

MUSIKODE was developed by Petter Henriksen and Tor Sverre Lande in cooperation with Prof. Ole-Johan Dahl

Illustration 52

Academic Systems Oslo University (MUSED, Kjell E. Nordli)

Input device: Perqs with MUSIKODE and mouse

Output device: Imagen printer (300 d.p.i.)

Status: in transition to VAXStation II with MIDI input

Reduced

Conclusion of preceding example



Illustration 53

Academic Systems
Oslo University (MUSED, Kjell E. Nordli)

Input device: Perqs with MUSIKODE and mouse

Output device: Imagen printer (300 d.p.i.)

Focus: standard repertory, Norwegian folk music; provision for quantitative analysis

Reduced

Part extracted from preceding score

Schutz Psalmen Davids 1619

BASSO CONTINUO



Academic Systems
Oslo University (MUSED, Kjell E. Nordli)

Reduced

Screen display for MUSED system

NOTE				TAKT	STEMME	KOMP	TABLET-FUNKSJON
							Marker Symbol V Symbol H Avslutt
1. BEETHOVENS FEMTE							
				1	2	3	4
				5	6	7	
FLOYTE							
OBO							
KLARINETT							
FAGOTT							
HORN							
TROMPET							
FIOLIN 1							
FIOLIN 2							